

PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

**NOTIFICATION CONCERNING
SUBMISSION OR TRANSMITTAL
OF PRIORITY DOCUMENT**

(PCT Administrative Instructions, Section 411)

Date of mailing (day/month/year)
21 July 2004 (21.07.2004)

To:

LEE, Sang-Yong
4F., Byukcheon Bldg.
1597-5 Seocho-dong
Seocho-gu
Seoul 137-876
Republic of Korea

Applicant's or agent's file reference
PCT04-023

IMPORTANT NOTIFICATION

International application No.
PCT/KR2004/000750

International filing date (day/month/year)
31 March 2004 (31.03.2004)

International publication date (day/month/year)
Not yet published

Priority date (day/month/year)
17 June 2003 (17.06.2003)

Applicant

SAMSHIN CREATION CO., LTD. et al

1. By means of this Form, which replaces any previously issued notification concerning submission or transmittal of priority documents, the applicant is hereby notified of the date of receipt by the International Bureau of the priority document(s) relating to all earlier application(s) whose priority is claimed. Unless otherwise indicated by the letters "NR", in the right-hand column or by an asterisk appearing next to a date of receipt, the priority document concerned was submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b).
2. (If applicable) The letters "NR" appearing in the right-hand column denote a priority document which, on the date of mailing of this Form, had not yet been received by the International Bureau under Rule 17.1(a) or (b). Where, under Rule 17.1(a), the priority document must be submitted by the applicant to the receiving Office or the International Bureau, but the applicant fails to submit the priority document within the applicable time limit under that Rule, the attention of the applicant is directed to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.
3. (If applicable) An asterisk(*) appearing next to a date of receipt, in the right-hand column, denotes a priority document submitted or transmitted to the International Bureau but not in compliance with Rule 17.1(a) or (b) (the priority document was received after the time limit prescribed in Rule 17.1(a) or the request to prepare and transmit the priority document was submitted to the receiving Office after the applicable time limit under Rule 17.1(b)). Even though the priority document was not furnished in compliance with Rule 17.1(a) or (b), the International Bureau will nevertheless transmit a copy of the document to the designated Offices, for their consideration. In case such a copy is not accepted by the designated Office as priority document, Rule 17.1(c) provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.

| <u>Priority date</u> | <u>Priority application No.</u> | <u>Country or regional Office or PCT receiving Office</u> | <u>Date of receipt of priority document</u> |
|---------------------------|---------------------------------|---|---|
| 17 June 2003 (17.06.2003) | 10-2003-0039239 | KR | 19 April 2004 (19.04.2004) |
| 18 Dec 2003 (18.12.2003) | 10-2003-0093184 | KR | 19 April 2004 (19.04.2004) |

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

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PENT COOPERATION TREATY

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INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

| | | |
|---|--|--|
| Applicant's or agent's file reference PCT04-023 | FOR FURTHER ACTION | see Form PCT/ISA/220 as well as, where applicable, item 5 below. |
| International application No. PCT/KR2004/000750 | International filing date (<i>day/month/year</i>) 31 MARCH 2004 (31.03.2004) | (Earliest) Priority Date (<i>day/month/year</i>) 17 JUNE 2003 (17.06.2003) |
| Applicant SAMSHIN CREATION Co., Ltd. et al | | |

This International search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 2 sheets.

It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, see Box No. I.

2. Certain claims were found unsearchable (See Box No. II)

3. Unity of invention is lacking (See Box No. III)

4. With regard to the title,

the text is approved as submitted by the applicant.

the text has been established by this Authority to read as follows:

5. With regard to the abstract,

the text is approved as submitted by the applicant.

the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the drawings,

a. the figure of the drawings to be published with the abstract is Figure No. 1

as suggested by the applicant.

because the applicant failed to suggest a figure.

because this figure better characterizes the invention.

b. none of the figure is to be published with the abstract.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR2004/000750

A. CLASSIFICATION OF SUBJECT MATTER

IPC7 H01M 10/40

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

C08L23/00, H01M2/16, C08J9/28

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean Patents and Application for Invention since 1975

Korean Utility Models and Application for Utility Models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

NPS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|---|-----------------------|
| X | JP 12-212323 A (Ashahi Chem. Ind. Co. Ltd.) 2 August 2000 See Whole documents and Claims | 1-10 |
| Y | JP 14-190291 A (Sumitomo Chem. Co. Ltd.) 5 July 2002 See Abstracts and Claims | 1-3,10 |
| Y | US 4994335 A (Ube Ind. Ltd.) 19 February 1991 See Abstracts and Examples | 1-3,10 |
| A | JP 14-240215 A (Tonen Chem. Corp.) 28 August 2002 See Abstracts and Claims | 1-10 |

 Further documents are listed in the continuation of Box C. See patent family annex.

- * Special categories of cited documents:
- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier application or patent but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- "&" document member of the same patent family

Date of the actual completion of the international search

06 JULY 2004 (06.07.2004)

Date of mailing of the international search report

07 JULY 2004 (07.07.2004)

Name and mailing address of the ISA/KR


 Korean Intellectual Property Office
 920 Dunsan-dong, Seo-gu, Daejeon 302-701,
 Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

KIM, Jun Hak

Telephone No. 82-42-481-5785



PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
LEE, Sang-Yong

4F., Byukcheon Bldg., 1597-5, Seocho-dong, Seocho-gu,
Seoul 137-876, Republic of Korea

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WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

| |
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| Date of mailing <i>(day/month/year)</i> 07 JULY 2004 (07.07.2004) |
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| | | |
|---|--|---|
| Applicant's or agent's file reference PCT04-023 | FOR FURTHER ACTION See paragraph 2 below | |
| International application No. PCT/KR2004/000750 | International filing date <i>(day/month/year)</i> 31 MARCH 2004 (31.03.2004) | Priority date <i>(day/month/year)</i> 17 JUNE 2003 (17.06.2003) |
| International Patent Classification (IPC) or both national classification and IPC IPC7 H01M 10/40 | | |
| Applicant SAMSHIN CREATION Co., Ltd. et al | | |

1. This opinion contains indications relating to the following items:

- Box No. I Basis of the opinion
- Box No. II Priority
- Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- Box No. IV Lack of unity of invention
- Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- Box No. VI Certain documents cited
- Box No. VII Certain defects in the international application
- Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

| | |
|--|--|
| Name and mailing address of the ISA/KR  Korean Intellectual Property Office 920 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140 | Authorized officer KIM, Jun Hak Telephone No. 82-42-481-5785 |
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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/KR2004/000750

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

a sequence listing
 table(s) related to the sequence listing

b. format of material

in written format
 in computer readable form

c. time of filing/furnishing

contained in the international application as filed.
 filed together with the international application in computer readable form.
 furnished subsequently to this Authority for the purposes of search.

3. In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/KR2004/000750

Box No. V Reasoned statement under Rule 43bis. I(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | | |
|-------------------------------|--------|-------|-----|
| Novelty (N) | Claims | _____ | YES |
| | Claims | 1-10 | NO |
| Inventive step (IS) | Claims | _____ | YES |
| | Claims | 1-10 | NO |
| Industrial applicability (IA) | Claims | 1-10 | YES |
| | Claims | _____ | NO |

2. Citations and explanations :

The claimed invention relates to a complex membrane for an electrochemical device such as lithium secondary battery, manufacturing of the membrane and an electrochemical device having the above membrane. This invention also includes the complex membrane for electrochemical device of a polyolefin fine-porous membrane and a porous membrane of nano fiber on a web and united to one surface of the polyolefin fine-porous membrane.

Following document has been cited in the International Search Report:

D1 : JP12-212323(ASHAHI CHEM IND CO LTD) 2 August 2000

D1 discloses a finely porous polyolefin-based membrane having an elongated cycle life without damaging a battery-assembling property and useful as separators for lithium ion secondary batteries which can stably be used for a long period, by forming a membrane structure having a specific average pore diameter and a specified average surface pore diameter. This finely porous polyolefin-based membrane has an average pore diameter of 0.01-0.2 μm and an average pore diameter of 0.5-2 μm on at least one of the surfaces. The finely porous polyolefin-based membrane preferably has a porosity of 80-70% and a thickness of 10-80 μm . The finely porous polyolefin-based membrane is preferably obtained by orienting the membrane layer A in one direction to form a membrane layer B, and then laminating the membrane layer A to the membrane layer B to form the laminate structure.

The present invention is considered to be industrial applicable.

But, the claims 1-10 are considered to be lack of novelty and inventive step over the admitted prior art of "finely porous polyolefin-based separator "(D1).